

OBSERVATIONS
ON
SPASMODIC CHOLERA,

ITS
Origin, Nature, and Treatment;

WITH
REMARKS ON EPIDEMIC DISEASES GENERALLY.

FOR THE BENEFIT OF THE CHOLERA FUND

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THIS little production has been written during the short intervals of attendance at the Cholera Hospital; but I have thought much on the disease, perused the various works which have appeared on it, and carefully contemplated the numerous instances of it which I have now had an opportunity of witnessing. The desire of lending my feeble aid to the praiseworthy efforts of the Board of Health, and of assisting to spread what I have been led to consider just views on the subject of the epidemic which now afflicts us, have been my motives for bringing my thoughts before the public.

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OBSERVATIONS

ON

SPASMODIC CHOLERA.

I FEEL persuaded that epidemic diseases are not the necessary heritage of mankind. Like other terrestrial phenomena, they have certain causes or precursors. It is frequently a difficult problem to ascertain what these are, although it is a matter of the utmost importance to do so; for without a knowledge of this kind, how can we devise means for arresting the progress or preventing the inroads of epidemics? The production of pestilence is a result of the operation of one of the various agents, which act upon the organization, and influence the operations of living bodies. It is an enormous evil, no doubt; but it is somewhat consolatory to become acquainted with the manner of its production, and to know that if it arise from some invasion of the physical laws of our nature, so, a better acquaintance with, and closer observance of these laws, will ensure our preservation.

Every disease, without exception, whether epidemic or otherwise, arising from external causes, must take its origin from the operation of some one or other of the phenomena of nature, acting in opposition to the functions of our organization. But the specific manner in which diseases arise, is still far from being accurately known, although there are few subjects of inquiry more worthy of being studied; for until we know this, how are the physical health and well-being of mankind to be effectually promoted? Diseases are mostly intractable enough, and it is infinitely desirable to be acquainted with every means of preventing their inroads.

Most epidemics have had a local origin. Some particular concurrence of circumstances generated the poison to which the first susceptible person exposed was the victim, and he in turn became the origin and the means of its further propagation. This circumstance seems truly strange and mysterious. It would appear to us enough, that those persons only should be affected who came within the influence of

the local agent. But no—they in their turn become other centres of disease, until at length, nothing hindering, it runs the circuit of all the habitations of mankind. What is the final cause of this? May we not venture to affirm, that since Providence does nothing in vain, there must be a reason for it. Surely there is—and I take it to be this:—If we look around us and reflect, we observe that the most extraordinary care has been taken by Nature to secure the health of our species. Every encouragement is held out to that line of conduct by which it is promoted, while misery and unhappiness are the portion of him who neglects it. Nature protects the healthy, while she cuts off the diseased; and thus averts the degradation of our race. But her ordinary means of doing this are not always sufficient: some circumstance is sure to lead to the production of a pestilence, which stretches forth its ruthless hand, till the law of its existence is accomplished. The healthy and the vigorous do sometimes, it is true, fall victims; but nothing can be better ascertained than that the debilitated and the unsound do for the most part perish alone. If mankind were healthy and vigorous, pestilence would never assail them—it could not do so. It is commonly and truly said, that the pestilence knows its victim—it can have no mission to the healthy. What a lesson to mankind, then, if they will but take it—what an incitement to temperance and sobriety, to procuring the means of health and well-being to ourselves and to others. We may mourn over the melancholy fate of humanity, subject to such a complication of evils, but it is on the whole well. The population of the earth is thus kept young and vigorous; and any evils which we suffer from such a condition of things here, will, I trust, be amply overbalanced hereafter.

Although it is true that pestilence has its march among the broken down, the infirm, and the weak, yet it does not wholly confine itself to these. It happens on occasions, rare indeed, that the young and the robust, from some unknown peculiarity of constitution, come within the sphere of its influence, and are snatched off without much warning. But those who are in easy circumstances, and in the enjoyment of habitual good health, are rendered liable to attacks from another cause—I mean the casual and temporary indisposition brought on by neglect, accident, or compliance with the customs of society. Few indeed are there, who have the knowledge, the resolution, or the means of following the rule of nature in their lives. It will appear from this, that although the worn-out and the intemperate are the most frequent subjects of attack, others who are not so, cannot always escape; for the state of our frames, when labouring under temporary ill health, is closely allied to that in which it is

habitual. The wealthy and the exalted, therefore, do not wholly escape; and their humanity receives an additional impulse from this consideration, to labour in the expulsion of destitution and misery, and consequently of pestilence, from the abodes of mankind.

It is not easy to know what the exact circumstances are, which lead to the development of epidemic diseases, or how they produce them when they do exist. In modern Egypt we see the filthy state of human habitations, and the careless, brutal manner of inhuming the dead; and when we witness a disease of tremendous virulence springing up under such circumstances, we are reasonably entitled to refer this disease, which we call the plague, and which was unknown in ancient times in that country, to this condition of things. In certain districts of America, and in most of the West India islands, at particular times of the year, there is a hot, burning sun, with a rank, moist, and sometimes marshy vegetation. Exhalations are produced, which lead to a disease called the yellow fever, which sometimes, when these causes are peculiarly active, becomes epidemic. Other places might be mentioned, but these will probably suffice. The Cholera is said to have commenced at Jessore, in the Delta of the Ganges; and it is known that there prevails in that district a rank, marshy soil, and an exuberant vegetation under a sultry sun. All the epidemic diseases of which we know the history, have had a similar origin.

The virulence with which an epidemic breaks out, and even its existence, depend upon the general condition of the individuals submitted to the influence of the circumstances already spoken of. If they be well supplied with the necessities of life, and are cleanly in their habits, the pestilence will not break forth. Now this is a most important law; for it seems, I think, to be ascertained beyond the shadow of a doubt, that pestilence will not arise when the people are well off. Sporadic or scattered cases will indeed happen; but they will not spread. Of course I except those places which are unfit for human existence. Hence, it will be seen, in virtue of the preceding, that when a people are subjected to famine, a very slight cause is sufficient to kindle a pestilence: war, famine, and pestilence, are, therefore, seen frequently following in each other's train. War leads to famine, and famine to pestilence, in inevitable succession, as if denouncing each other and the causes which have produced them.

Abundance of speculation has taken place as to the manner in which Cholera arose; but the simplest view of the case seems to be, that putrid emanations from an unhealthy soil, acting upon the enfeebled organs of a debilitated and impoverished people, of impure habits, in a manner which

we do not minutely understand, produced this disease.—Why it did not take place before, if this be the case, may be replied to by saying, that the particular condition of the soil, season, and of bodily deprivation, had not happened before. If it be said to have occurred in more places than one simultaneously, then these causes must have come simultaneously into existence.

We need not seek for the solution of this question in the existence of telluric exhalations, in changes of the electrical condition of the atmosphere or soil, or in some other unknown something. A weakened condition of the organic powers, acted upon by the foul products of a vitiated vegetation, seems the obvious cause; nor does it appear that we shall be able to penetrate much farther. If any one ask me why yellow fever or plague did not spring up at Jessore in place of Cholera, I will reply that I cannot tell. The operations of malific agents are infinitely diversified, and every change in their depressing action produces a corresponding change of feature in the incident complaint. Sometimes one organ is attacked more than another; and sometimes several are attacked together; and hence, although they may differ in the details, diseases are necessarily and naturally, so to speak, divided into families, according to the functions or organs which are attacked.

No subject has so frequently and so anxiously been discussed, as whether epidemic diseases, and Cholera in particular, be contagious. Men of the highest talents and most extensive experience, both professional and unprofessional, have taken opposite views. A multitude of indirect arguments have been urged on both sides, with more or less weight, and with more or less skill, according to the talents of the disputants. The direct arguments may be reduced, however, to two:—The contagionists affirming that many persons have taken the disease after coming into contact with it, and the anti-contagionists asserting that many are exposed to the disease who do not take it at all. Now, both are correct; but, if the former can be ascertained in a sufficient number of instances, to do away with the mere coincidence, then the contagious nature of Cholera, for I speak of Cholera, is ascertained beyond a doubt. And I believe the evidence in favour of the disease having arisen from intercourse, to be overwhelming. It would take up too much room to consider the collateral evidence in this question, in this place—nor is it necessary; for if it be once established, that in one or more instances Cholera has resulted from personal communication, then the question is settled beyond appeal. If the facts stated on this head be correct, there is no possibility of arriving at any other conclusion. And facts of this kind have been transmitted from a variety of quar-

ters, and from individuals of scientific correctness and unimpeachable veracity.* Nor did I myself yield my conviction on the subject, till the number and the urgency of the instances seemed to leave no room for further hesitation.—There is no lack of negative evidence on the subject, but this at best is but of an ambiguous nature; for if there have been individuals who have secluded themselves, and have not taken the disease, so the instances are infinitely more numerous where there was the fullest exposure, without any ill consequences arising. To be sure, when a great number have escaped who were confined together, it seems to exalt the efficacy of seclusion; but then, individuals who can afford to practice this voluntarily, have been generally in easy circumstances; while, on the other hand, Cholera has found its way through the bolts and bars of the prison-door.

The question of contagion is indeed one of vast importance, as it is one in which the hopes and fears, and frequently the interests of mankind, are largely concerned;—and it is precisely on this account, that the question has become one of such an unintelligible, complex nature. The minds of many were warped so as to give a readier accordance, to what it seemed their immediate interest to believe; but it may be safely asserted, that it must be most for our interest, in the long run, to believe what is true, whether Cholera be contagious or the contrary; for if an erroneous belief be adhered to, evil must somewhere or other surely result from it. This question, then, should be discussed in a calm, dispassionate manner. It has been the habit for some of the disputants to prejudge the case, by alleging the evil consequences of a particular conclusion; but surely the point at issue should be first established, if possible, before we begin to draw conclusions on either side. The advocates for non-contagion have said, it will go to destroy commerce, and tear up the better feelings which bind families and individuals together, by the roots, if you assert the disease to be contagious; while adherents of contagion say, by urging the non-infectious nature of this formidable disease, you pave

* See the excellent Report of the Belfast Board of Health, in which a conclusive statement will be found, of the introduction of Spasmodic Cholera through contagion, imported from Scotland; and also the ramifications of the disease from this source, in the earliest instances. I have witnessed, however, several unquestionable cases of its existence. Subsequently, the course of the contagion could not always be traced. In the numerous list of English and French publications which I have consulted, and to the authors of which, I acknowledge my obligations in general terms, numerous instances of the transmission of the disease from person to person are given. These are too numerous to quote, but I refer the reader to Orton, Hawkins, Kennedy, Hancock, the *Lancet*, the *Edinburgh Medical Journal*, the *Foreign Quarterly*, the *Westminster*, and many others. Mr. Bell, in his clever work, seems to question the point of contagion. The Report of the Belfast Board of Health gives a valuable outline of the precautionary measures which were employed to meet the invasion. The exertions of the Members of the Board have been truly unremitting, and are above all praise.

the way for the reception of the relentless demon of pestilence, which, propagated from person to person, in consequence of the undoing of all precaution, will finally lead to the most destructive consequences. It could be very easily shown, how erroneous such a mixed mode of reasoning is; but it will be better to proceed at once to a statement of the actual nature of the disease in this respect, so far as it has been ascertained, and then to draw any consequences which may be legitimately deducible.*

I take up the position then that Cholera is conditionally contagious or infectious, for these terms have now a common acceptation. It is a disease which is contagious, but limited in this respect by certain conditions, to which it is, in common with all pestilential diseases, subjected. What are these conditions?—why, susceptibility is one of them. It is the first grand feature in the march of these diseases, that they do not attack mankind indiscriminately. Those in whom, all things considered, the principle of life is in energetic action, are little, if at all susceptible of their influence; while, on the other hand, they in whom this principle is permanently or temporarily weakened, are more or less susceptible, according to the ratio or extent of the deterioration. This principle is one which cannot be too conspicuously displayed; it explains at once, why the poor and wretched are the constant victims of pestilence in all times and countries, and why the alert and vigorous escape; and it does away with the apparent anomaly of the same disease appearing contagious at one time and not so at another.

The great majority of those who have been attacked with Cholera, have been the dissipated and the enfeebled, or those labouring under temporary sources of debility. In one class the powers of life have been weakened by incessant overstimulation, and in the other, by the equally incessant application of debilitating agents, such as bad or insufficient food and clothing, intemperate exposure to the weather, and depressing passions. In these last, the capabilities of the corporeal machine have never been duly developed or sustained—in the former, the springs of existence have been kept incessantly on the stretch, so that, in either case, the least additional strain snaps the bond for ever asunder. The fewer the debilitating agents are, the more easily will any single one be borne in proportion to its intensity; thus a

* Most of the attendants in the Belfast Cholera Hospital, have had slight diarrhoeal affections since the commencement of their duties, which, however, were promptly terminated, by the exhibition of a little laudanum in an aromatic tincture. Two individuals complained of cramps in addition. Personal anxiety, and the sense of responsibility attached to the charge of many lives, will, no doubt, have more or less effect in the production of these inconveniences; but it is pretty well ascertained, that the contagion of Cholera will cause more or less derangement of the animal functions in cases where the disease itself is not re-produced. One of the apothecaries experienced a smart attack of Cholera; and one nurse who was seized fell almost immediately into collapse, but has since recovered.

person who is well clothed and lodged, and not exposed to fatigue, will bear a greater degree of privation in the article of food, than one who endures them all. And, on the other hand, a hard drinker, if he will use air and exercise, so as to create an appetite for solid food, will be able to indulge in much greater excesses than those in whom the digestive powers are enfeebled. And this holds true with regard to all the sustaining and debilitating agents which hold sway over our mortal existence. How true is it, for example, that a cheerful person will remain in better health under the use of inferior sustenance, than another who is not so: so true indeed is this, that popular sayings record the fact in every language. The happy mean lies in avoiding either extreme of too great excess, or of self-denial; though it must be confessed, that in those who have the means, excess is in general more prevalent than its opposite.

Much depends upon habit and mode of life, and much upon the original or the acquired constitution of the individual exposed to disease. Infancy and old age are, other causes alike, more subject than those of intermediate years. Many persons have sufficient habitual stamina of constitution to resist disease, but whose powers of repelling it fail them, when subjected to the temporary influence of debilitating causes. The vigorous, or those seemingly so, are not always exempt during the invasion of epidemics; but such cases are rare, and probably arise from temporary debility. The weakening influence of low diet, moisture, cold, and depressing passions, is well known; but that of fear is not so obvious, because not so manifest. I look upon fear as a most powerful source of disease, for by the minute sympathy which exists between mind and body, the powers of the latter in warding off disease, are vehemently enfeebled or reduced by it; hence it often is, that the strong in constitution may be reduced below the weak, and disease and death ensue, which they would not otherwise have been subject to. But if fear be debilitating, so, on the other hand, courage is invigorating; and all things else alike, the strongly-minded man or woman will resist disease and death, where others would surely perish. Fortitude alone will bring us through an infinity of perils, which we have no other means of averting. Even ordinary men, when forced by circumstances to act with vigour and resolution, will preserve their health and strength, when those around them, not impelled by the same causes, perish. Captain Beaver, a man of no common understanding, however, I firmly believe, preserved his life through his energy and fortitude, when most of his followers died during an attempt to form a settlement on the coast of Africa. And even death itself, when it becomes inevitable, produces but little terror when it occasions any, in the courageous and evenly-balanced mind.

There is another agent, which, as it possesses a good deal of influence over the progress of epidemic disease, must not be overlooked—I mean habit. Custom blunts the impression of morbid agents on our organs. They who have recovered from one attack, rarely experience another; and those whose frames have been gradually familiarized to the contact of these agents, will frequently, it appears, escape an attack, which they would not have done if they had been subjected to their full influence at once. Habit, also, commonly lessens the sense of danger, and thereby does away with the injurious interference which fear invariably exercises over the bodily functions.

The best means of preservation will lie in cheerfulness of mind, and bodily temperance and regularity; in the avoidance of all extremes, and in the ready performance of any duty which may devolve upon us. We are not required to rush needlessly into the way of danger, or to run away from it:—excess of caution is about as hurtful as excessive rashness; and it has not been found, generally speaking, that those who devoted themselves to the care of the sick, have suffered more than those who confined themselves to the interior of their dwellings; while the imaginary security of the latter is hardly purchased by the sacrifice of the rich and glowing feelings which the exercise of philanthropy affords.

There has been a world of discussion about the mode in which the contagion of Cholera spreads. This has been the case during every epidemic disease. The manner of contagion or infection may be said to be twofold—mediate and immediate, or direct and indirect. It is said to be immediate or direct, when the disease is communicated by the body of the sufferer, or the objects immediately surrounding him; and mediate or indirect when the virus is transmitted to a distance through the atmosphere, or by means of clothes, furniture, goods,—or is left adhering to apartments or utensils. We presume that it is contagious, in the first place, when we witness a succession of individuals contracting the disease after coming in contact with the sick or their remains; and we likewise infer that it is transmissible to a distance, when sickness ensues upon making use of an article which has been in contact with one who has had the disease. The first cases in any town are generally referrible to direct contagion; but afterwards, when the disease spreads, the progress of contagion cannot be traced through the transmission of gross material substances: hence our remaining conclusion is, that the virus is wafted through the atmosphere, and lights upon the debilitated and predisposed. But we have direct evidence of the certainty of this. Of a number of ships which entered the Hoogly together, and lay at anchor off Calcutta, it was observed that the crews of those ships which lay to

leeward of the ships in the river which had the disease on board, took the disease also. A similar fact has been observed in India, in overland expeditions, when troops marching to leeward of an infected city, were observed then and there to take the disease; while another case, precisely in point, is stated to have occurred in the Medway, by the quarantine officer stationed there. Now if the epidemic virus be diffused in one place, this may be inferred to be the case in all, so that in every town where the disease is general, the poison of the disease may be concluded to have vitiated the atmosphere to a greater or less extent. Further collateral evidence is afforded of the truth of this proposition, by the fact, that it often happens, as at Moscow, for example, during the prevalence of Cholera, that derangement of the digestive organs becomes very general in persons whose vigour of constitution is too powerful for the virus to affect it, or on whom it is too weak to produce any effect. By some, however, this very fact is quoted as a proof that the disease arises from local non-imported causes, as in the first instance; but if the evidence for contagion be considered satisfactory, is it not much more reasonable to refer the extension of the disease to the latter, than to the simultaneous or successive generation of a tissue of circumstances capable of re-producing the disease, as in the first instance at Jessore, over such a variety of soil, climate, and season. Even granting that Jessore was not the first place in India, nor the only place at a given time where the disease was brought forth, it will not invalidate the position already set out with; and in arguing upon the ratios of probabilities, surely it is most reasonable and most philosophical to adopt the most simple and obvious method of doing so. The simultaneous and successive production of Cholera by local causes, involves us in an immense chaos of contradictions and assumptions, which can only be got over by admitting the truth of the doctrine of contagion. It is possible, indeed, that this simultaneous production might take place; but is it probable? Surely, if we looked for it, it would be in its native soil—in the moist and sultry alluvions of the East, where it is more than probable that Jessore was not the only nor the first locality of its birth.

Some considering that the effluvia from the bodies of the sick, in places distant from the native origin of the disease, was not sufficient to affect the atmosphere, have had recourse to the supposition of a kind of fermentation, by which its powers were increased in quantity and virulence. But there is not a shadow of evidence for any such process, and it is highly unphilosophical to assume its existence otherwise.

People talk of the forerunners of pestilence, about green flies, and dry seasons, and wet ones—plentiful years and years of scarcity; but the fact is, that apart from the ques-

tion of its origin, the disease has spread in all climates, and under every possible variety of season and soil; and that what have been called forerunners are nothing more or less than accidental occurrences. But this, however, is not meant to interfere with the probability that the disease may be hurried or retarded, according to the circumstances of the country into which it makes its inroads. So true is this, that I firmly believe, from sickening mortality to absolute security rests in the nature of the soil and climate, and the condition of the inhabitants of a threatened territory, but principally upon this last circumstance. No country seems yet to be perfectly free from the possibility of an inroad, because none are sufficiently far advanced in civilization, and in the possession of comforts and moral intelligence; but that the world will yet be so, I cannot doubt: the difference between the violence of the attack in different places, shows the influence of these circumstances in modifying it already.

Fortunately for mankind, that Power which regulates and tempers all things, has also placed a limit to the invasion of pestilence. By the law of its existence and progress, it can continue in no one place for an unlimited time. The attack in its onset is generally most violent, because then the weakest and most susceptible individuals are seized; as the number of these gradually diminish, so the disease decreases in force and violence, until it finally ceases and dies away for want of prey. Were this not so, mankind would be speedily destroyed, as with every attack, fresh stores would be added to the accumulation of the poison; but, as I have elsewhere ventured to assert, the final purpose of the pestilence is to bring mankind to a right mode of living, and by cutting off the intemperate and debilitated, to maintain the race in ability and vigour; so, having accomplished its purpose, it necessarily ceases. Let us not repine; we are subject to no evil unless to prevent a greater one; without these modes of rectifying the consequences of our errors and our ignorance, our race would decline, until, at length, ceasing to wear the aspect of humanity, it would perish from its inability to maintain itself in existence.

It is a question of deep moment, how far the utility of quarantine extends. That it has proved useful in some cases, cannot be doubted; but it seems to have signally failed on a large scale. Russia could not escape by means of it; Prussia was invaded, notwithstanding a triple cordon of bayonets; and the quarantine system has been in full force on our own coasts, without affecting its object. It would seem impossible to cut off all intercourse between adjoining countries, having a wide frontier; innumerable cases of communication will ensue, by any one of which the disease may

be propagated, notwithstanding the most rigid interception of intercourse which it is possible to effect; and how is it possible, besides, to set limits to a pestilence which infects the air? It would seem that the utility of quarantine is confined to the interception of actual cases of disease, and the purification of articles, by heat or otherwise, which may have served as vehicles for the contagious virus. Further delay than what this may require, seems only calculated to impose injurious restrictions on commercial and general intercourse.

It is still a subject of inquiry, what the best means are, of destroying the latent poison, and of preventing its accumulation. I would, without further preliminary, place rigid cleanliness the first on the list, and secondly, the removal of all unnecessary moisture. Suspected substances should be heated to 212° , when this can be done without injury; wearing apparel and bed-clothes, if heated in a Papin's digester, or steeped in a solution of chlorine, will be effectually purified; or if circumstances should render this inconvenient, they may be burnt. Uncleanliness is a most pestilent vice, and not less productive of moral than physical impurity, and the powerful promoter of all kinds of diseases, but especially of epidemic ones. I consider the observance of it as one of the most important means of preserving health; and the strictest attention to it, in every operation about the sick, cannot be too carefully enforced.

The formidable disease, which generally receives the name of Cholera Morbus, has been about fourteen years in reaching us, but seems to have lost none of its characteristics in the transit; if there be any difference, it consists in being more vehement in the individuals who are attacked, but less general in its assaults. The susceptible subjects seem to be fewer in most parts of Europe than in the East; but without entering into the question of the reason of this, I shall briefly describe the complaint itself.—The person affected, may feel a general uneasiness for some days, or the disease may come on all at once, which it does with sickness at the stomach, and a sudden discharge of a serous fluid from the stomach and intestines, without much pain, but attended with a feeling of weakness and sickening emptiness. This continues for some time, with more or less violence; the weakness increases, the pulse becomes faint, and then ceases, and finally, cramps ensue. The extremities now become cold; the animal heat decreases; the skin shrinks in; the tongue gets moist and cold; and the pulse becomes indistinguishable in the wrists. The limbs, for the most part ice-cold, now assume a blue, and sometimes a leaden hue; the flesh seems to retreat; the contour of the figure loses its fulness; the fingers bend in like the claws of a bird; the lips retract, and show the teeth; the features collapse; the eyes sink in the socket,

and assume a peculiar indefinable expression of anguish and feebleness, and are surrounded with a livid ring; the voice becomes low and stridulous; and a cold clammy sweat bedews the face and extremities. The heart's action is now faint and feeble; the respirations become slower and more laboured; and the mind, which was hitherto cognizant of the external world, almost ceases to receive impressions from without. Kind Providence seems willing that the final scene should close in silence and in peace. For sometime after this period, the breathings become more and more enfeebled; the heart struggles in vain with the load which oppresses it, until, at length, without a sigh or a groan, the weary inmate of the shattered tenement, flies its home for ever.

I need not say that the preceding description is not sufficiently full, as to minor particulars. The disease may be days in running its course, or it may be a few hours; occasionally the watery dejections are absent, but there is generally great precordial oppression. The discharges cease first, and then the cramps, before death ensues. All the secretions are interrupted. If nature or medical aid stop the disease, it may never proceed beyond the outset, or may cease at any after period; but recovery seldom takes place after the collapse or full blue stage sets in. Recovery is evinced by the cessation of the symptoms just described, and the revival of the ordinary functions; the respiration becomes free; the pulse begins to beat; a warm perspiration breaks out, the secretions recommence, and the patient finds himself in a state of comparative ease and comfort; so much so, that one could hardly think that he had been the recent subject of such a tremendous visitation. Recovery, however, when it ensues, is not always thus rapid; a secondary fever, of a severe stamp, will sometimes set in. This fever not unfrequently proves fatal to those who have escaped the first attack. But the disease will be more fully elucidated afterwards, by an analysis of its nature and constitution.

I must premise, by stating that Cholera is essentially a disease of function, any organic change that may ensue, is the result—the consequence, but not the cause of the disease. The poisonous agency which produces Cholera, acts by destroying or diminishing the action of one of the three grand divisions of that nervous system, by whose powers the human frame is maintained in life and vigour. These three are, the respiratory, the cerebral, and the sympathetic; and it is by the lesion or injury of the last, that Cholera Morbus is produced. The breathing continues, as the nerves upon which this function depends remain intact; the senses and the voluntary muscular powers continue whole, as the brain and its dependencies are unaffected; but as the motion of the heart, and the integrity of the secretions, depend upon the

sympathetic nerve, its ganglions and plexusses, so the loss of power in the latter, also diminishes, or entirely interrupts these functions. Hence the motion of the heart, and consequently the circulation of the blood, and the production of animal heat, are impaired; the secretion of bile, urine, and the rest ceases; and as the integrity of the whole nervous system depends upon that of its parts, so the lesion of the latter, causes that of the former, until, if it continues long enough, death itself must ensue, from the want of harmony in the system. Hence it will appear, why the renewal of the secretions is justly considered a favourable sign. As the mouths of the excreting vessels, or in other words, the extremities of the arteries terminating upon the inner surface of the intestines, lose their tone, immense quantities of fluid are thrown out, and the blood is, as it were, drained of its fluid part, or serum. So when we take away blood in this disease, it is thick and tenacious, as well as dark coloured, there being no arterialization, or conversion of the dark venous, into red arterial blood in the lungs. Such, in brief terms, is the nature of this disease, which has committed such extensive ravages, and consigned so many millions of our race to the dust—ravages which no pen could chronicle, heart sympathize with, nor intellect fully conceive.

I have said before, that we did not know the exact nature and operation of the poison which produces Cholera. That it was not communicated by contagion in the first instance, is quite self-evident, and equally true of all contagious diseases; but is it not most wonderful how it is, that the human frame possesses the power of generating a continuation of that poison, capable of producing the same effects: this is among the hidden mysteries of our nature, which human sagacity is not yet competent to lay open. We know, however, by experience, that under certain conditions of soil and climate, this poison is produced, and that the formidable disease called Spasmodic Cholera results to those predisposed persons who are exposed to its influence. The question of predisposition has been discussed before; we know that any thing which weakens the frame generally, also weakens the sympathetic system of nerves, and so increases the liability to the disease. Hence the dangerous influence of starvation, insufficient clothing, organic lesions, corporeal exhaustion, and depressing passions. But there are other evil agents at work besides these; agents that do not act by supplying an insufficient nutriment, but by overstimulating and consequently weakening the frame. I allude to the use of alcoholic drinks, which appears to prove in large quantities a direct poison to the sympathetic nerves, and the functions which they watch over; and the excess of drink, next to starvation or the direct absence of nutriment, has paved the way more effectually for the ravages of Cholera than any other cause. This is, how-

ever, but one out of the multiplicity of evils which intemperance, fit offspring of human ignorance, has led to.

The preceding outlines of the complaint will have afforded an easy transition to the mode of treatment. It consists in increasing the power of the stricken system of nerves, in remedying the results of its inefficiency, and in lessening and rendering light and easy the burthen of its functions.

There is perhaps no stimulant, real or supposed, in the catalogue of medicine, which has not been tried; but my business is not with the doubtful, but the efficient remedies. The means of prevention both general and personal have been already touched upon; what has been said on this subject therefore, need not be repeated. We are not acquainted with any direct and certain means of acting on the sympathetic nerves, independent of the rest of the nervous system, and as this disadvantage cannot be avoided, it must be submitted to.

Of all the remedies made use of, calomel and opium, claim the highest rank, then heat, frictions, blood-letting, and emetics come next; then alcoholic drinks, aromatics, and a whole host of minor stimuli. Among the latter may be mentioned electricity, camphor, oxygen, protoxide of nitrogen or nitrous oxide, ammonia, capsicum, the essential oils, phosphorus, and an array of others, which I deem it unnecessary to mention.

The treatment varies with the condition of the patient and the stage of the disease. It is of infinite importance to secure medical aid as early as possible, for although in many cases, medicine proves of no avail, yet, there are few or no diseases in which its powers are so conspicuous when it is timely resorted to. In this disease it may be truly said, that the physician holds the fiat of life and death in his hands. If, however, the cases be permitted to proceed without intervention, the different stages follow so close upon one another, that all interference will frequently prove too late. Sometimes it will run through its phases in a few short hours, and at others it will kill at once, of which last, many frightful instances have occurred in the East. My own treatment has been, guided of course by all the information which I could gain on the subject, to bleed the patient, when the state of the circulation would permit it, taking away from ten to twenty ounces. Heat is induced at the same time over the surface by the warm air bath and spirituous frictions. The air-bath affords the quickest and least distressing mode of obtaining heat. I administer then or earlier, to an adult, from ten to twenty grains of calomel, combined with one or two grains of opium in powder, and washed down by a mixture of laudanum and some aromatic tincture diluted. This is repeated after one or two hours according to the urgency of the symptoms, paying less regard to the

quantity given than to the effect produced. If thrown off, it must be repeated as soon as possible. I have thus given in some cases, large quantities of these medicines in a few hours, and with the happiest results. In others, one or two exhibitions will serve to check the complaint. Much, however, will depend upon the mental resources and presence of mind of the practitioner, in the trying emergencies in which he will be sure to find himself, while conducting the treatment of this most terrible malady. Urgent as the symptoms are, a certain period must be allowed to take place, in order to ascertain the effect of the remedies. The smaller the variety which he administers, consistent with the end in view, the better will it be for the patient. There is, however, a great temptation to heap remedy upon remedy; but we must look to the remaining powers, and not tax them too far, lest we do harm rather than good. There will be enough to employ us in a small way, such as the keeping up of the temperature by the administration of frictions with warm flannel and spirituous liniments—and, above all, by urging every topic of consolation and encouragement that circumstances will suggest.

If the disease persists, we must continue to exhibit the calomel and opium, at intervals, with cordial drinks, mustard sinapisms to the stomach, and frequent frictions. If we meet with it in an advanced stage, or if it proceed to it, our treatment is the same—stimuli and excitement in every available form; the natural powers of life are fading fast away, and we must try all we can to awaken their dying energy. If the surface begins to grow colder and colder—if chill, dank sweats gush out over the surface—if the skin becomes blue and dark—if the cramps become urgent, the respiration laboured, and the action of the heart faint and low, we must redouble our exertions; now the struggle between life and death has begun, and the question must soon be decided, whether the pestilence will conquer or be conquered. Not a moment is to be lost; we must try to excite a blister on the stomach, by means of turpentine and the Spanish fly; warm and frequent frictions, heat, and repeated doses of brandy and spiced cordials. Sometimes the enemy will relax his grasp in the moment of seeming victory, when all earthly effort seems vain, and when it would appear that death had imposed his chill and relentless mandate. Five such instances have presented themselves to me. We must, therefore, never refrain from our efforts to save, while life remains. It is too true, however, that these last changes, for the most part, are the certain presages of inevitable death; for few, indeed, recover when the collapse, as it is called, has once set in. But, as I have said, we should not relax. Emetics of mustard and warm water have proved useful in this stage, by renewing the lost action of the heart; possibly galvanism might answer, but I have not yet

tried it. I have employed both phosphorus and the nitrous oxide in vain; the patient was able to say that the latter was pleasant, but it did not avert his fate. But when the disease has been attacked early—when we have been able to bleed copiously, and the calomel and opium have had time to act, a gentle, warm perspiration will bedew the surface, and the altered language, tone, and looks of the sick, amply proclaim the change. In such cases, and when the vital powers are not broken down by intemperance or debility, or depressed by organic lesions, I believe that the disease is curable in the great majority of cases; and much less mortal than fever. The subsequent exhaustion sometimes proves troublesome, and in cases of preceding debility fatal. The patient, therefore, ought to be carefully watched until quite recovered. The sufferers are most urgent for cold drink; water is often preferred to any thing else; but as they generally throw it off, I prefer giving them, when they will take it, rice, bread, or barley water, slightly heated—sour or sweet milk and water—or water acidulated with the vegetable or mineral acids—nitric acid being, however, preferred among the last.

It is almost incredible how quickly some will get round by timely treatment. A child was brought in, in its mother's arms, cold and faint; its eyes were sunk in the sockets, and its face had an expression which it was painful to look at. It received a few tea-spoonfuls of a mixture of laudanum, spirits, and aromatics, diluted, and was well rubbed before a fire. An hour had hardly elapsed, when its little cheeks were plumped up,—its eyes grew bright, while it was kicking about its legs, smiling at its own activity. There were cases not less well marked in adults, and equally decisive of the utility of early treatment; while in others of all ages and both sexes, a few hours too late has rendered assistance useless. Some were attacked in the morning, and were dead at noon, who had been brought to the hospital after the collapse had set in.

I would say that the treatment which I have just detailed, and which is essentially the same as that practised in India, is the best that has been made use of; and that, in ordinary cases, if used sufficiently early, it will procure the recovery of nine cases out of ten. The early exhibition of emetics are praised by many; but finding the calomel and opium perfectly efficient, I could not wish to resort to any other remedies. There is a mode of treatment, called saline, consisting of the administration of a solution of the chlorate of potash, carbonate of soda, and common salt. I tried it twice, fruitlessly, during the stage of collapse; and would not consider myself justified in setting powerful and tried medicines aside for its use. The injection of water, heated to 110° , into the veins, with a little salt and carbonate of soda, has been highly spoken of as having been useful in some cases, during

the collapse. I tried it to a slight extent in three cases, two of them fatal ones, without having reason to think that it influenced the results. A more extensive trial would be necessary before I could pronounce; but, as the blood seems to be drained of its serum, it seems *à priori* probable, that such a mode of treatment might prove useful, by diluting the thick and clammy blood; while respectable authorities are quoted in favour of the practice.

The fate of some of my patients was certainly hastened by their unconditional refusal to take medicine, being under an impression that it was poison. The most incredible and revolting stories are circulated and believed by the populace, as to the intentions of medical men, who are instructed, as they say, to poison as many as possible, at a certain sum per head. The more intelligent, however, scout this view; and as the people see individuals among them dying without medical treatment, and the numbers daily increasing of those who owe their lives to it, this belief soon dies away. Outrages, however, of a frightful nature, have been perpetrated under colour of this feeling, which afford a melancholy proof of the sad ignorance of the working population of Europe—whatever may be the increasing enlightenment of the times, they certainly do not share in it.

The nervous lesion which produces Cholera, is not tangible after death. The viscera are found gorged with blood; the bowels are empty, and the gall-bladder full. The redundancy of blood in the viscera is such, as to have erroneously given occasional rise to the belief that inflammation was a source or product of the disease; and the celebrated Broussais resolves the whole of it into a mere form of his famous gastro-enterite. But to be short, every thing denotes the stasis of the circulation, the remora and inspissation of the blood in the venous system, from the causes already mentioned.

The continuance of muscular irritability, sometimes, but rarely, produces galvanic contortions in the limbs after death. The fetor at the same period is particularly distressing; and from this and moral reasons, it is desirable to wrap up the remains quickly, in tarred cloth, without washing the body, and bury them in a deep grave soon after.

Any unusual display of funeral or quarantine apparatus, strewing of lime, ringing of bells, and the like, prove hurtful, by depressing the minds of the public, which should be encouraged to bear up against the dread of the epidemic, by the hope of its speedy cessation, if they will resolutely employ against it the means which have been already recommended but above the rest, temperance in all things, fortitude and cleanliness.

Having thus brought my remarks on this most striking visitation to a close, I shall close my observations with a few short inferences.

Pestilence is a trite word, but the knowledge of its cause, prevention, and cure, is neither common nor trite. It has hitherto been ushered into all countries, and at all times, with horror and dismay; and moralists and philosophers, so far from aiding us in this necessary inquiry, too often add, by their querulous accents and powerful description of its ravages, to the general terror. But it is now high time to awaken from this dream of sorrow. Pestilence has causes, and by the removal of these causes, we may avoid the evil. It is one of the instruments which the Deity employs for human improvement; for when mankind shall inquire into its causes and eradicate them, human happiness will be vastly increased. Now what are these causes, but ignorance, poverty, and war; and must not the removal of these effect an enormous advance in human well-being. This pestilence is now coursing over the earth's surface; it is every where snatching the poor and the destitute from their misery; while it cuts off the intemperate with a ruthless hand. The high in station have been so frequently attacked by it, as to show that no condition is perfectly secure. And as those evils which the rich and powerful share in common with the poor, are promptly attended to, so the invasion of Cholera, has caused a universal attention to their situation and the means of bettering it. Food and clothing have been provided so abundantly, that in many places the pressure of Cholera has added little or nothing to the ordinary mortality. In the unhappy East, however, it has been far otherwise; the people there are sunk so low from various causes, that human life has been swallowed up by it with frightful rapacity.

The pestilence is now among us; but, with courage and resolution, we may hope, under God, to allay and finally to put a period to its ravages. What is required under existing circumstances, has been already pointed out—but let us never forget, that the extinction of all pestilence depends upon the general advance of human knowledge, and consequently of human comfort and happiness.

NOTE.—There have been now, this 4th of July, nearly 500 cases of Cholera Spasmodica in Belfast, in all. Of these, 255 have occurred in the Hospital for Cholera. Out of this last number, there have been 72 deaths, and 140 discharged cured. Of the remainder, the great majority are doing well, and will recover. The probability of recovery is very great in all cases which come early under medical treatment, the very intemperate, aged, and debilitated excepted. The number of deaths would have been very much fewer, had it not been owing to the absurd prejudices of the people, which too frequently hindered the exhibition of all remedies until it was too late. Bleeding, calomel, and opium, with friction and alcoholic drink, in moderate portions, continue to constitute the treatment, which has, with the given exceptions, all the success that could be desired. A few hours of the exhibition of these remedies, serve to arrest the complaint, and bring on a gentle perspiration, with sleep, terminating in a complete cure. I am happy to add, that my present worthy colleague, Dr. KIDLEY, whose valuable assistance I have obtained since the preceding was written, entirely concurs with me in my views of the treatment; and I trust that its very striking and successful results will lead to its general adoption.